

Work Order ID 76668

76668

Page 1

November-18-11 1:03:18 PM

Item ID: D350-636-012

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Skidtube RH

Stop *NS2*

Start Date: 18/11/2011 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 02/12/2011 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: M.C.J Date: 11/11/18

Tooling:

Date:

Run Start *NR1*

QC: Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D2750	F
D3492	C

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy blue file and type labels per PPP D350-636-012 CHG 006

Switzky

[Signature] M.C.J 11-12-14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng & Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Revision ID:

Item Name: Skidtube RH

Stop ***NS2***Start Date: 18/11/2011 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 02/12/2011 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

110

0.00

110

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1- Pick D2600-3 Bent

2- Deburr FWD and AFT ends, remove bending marks. Scribe batch# inside
AFT end per dwg D2750

TW

11-11-25

3- Drill pilot holes for blade fitting bolt holes using DT8983. Open to 0.500",
deburr.4- Locate DT8329 off of blade fitting bolt holes and drill pilot holes for blade
fitting

5- Drill only two fwd step holes using DT9616. Ensure proper positioning.

6- Drill pilot holes as per Dwg D2750 sheet 4 (D2750-2 details). Drill using drill
Jig DT8150 & DT8863A for first side only DT8863B for second side (detail K)7- Clecko DT8863B on second side of tube and drill pilot holes for detail B.
SECOND SIDE

BB 11/11/27

8-Open up holes for Detail B to 0.375" (4 holes per side) and blade fitting
location holes to 0.500" (total of 4 holes per side) as per dwg D2750. Open up
holes for ground handling and detail L to 0.500" (8 holes per side)9-Drill pilot holes for wearplates as per Dwg D2750 using DT8108 open to
0.297".

10-Open up holes of Detail A to 0.297" (total of 2 holes per side)

Dart Aerospace Ltd

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Reference:

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

11-Weld D2744 Cap as per Dwg D2750 and QSI 004. Fill grooves in bend left
from bending as per QSI 004A/R Aluminum Rod batch: M118735BE 11-11-29

12-Grind welds flush as per Dwg D2750

Bull 11-30

120

QC10- Inspect visual per QSI004- ground welds

0.00

120

QC

Memo

0.00

Quality Control

fd 11.11.301 φ

130

QC5- Inspect part completeness to step on W/O

0.00

130

QC

Memo

0.00

Quality Control

m 21 11.30 (1)

W/O:		WORK ORDER CHANGES					
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1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

160

0.00

160

Skidtubes

0.00

Skidtubes

Skidtubes

Memo

1-Open up holes of Detail L and ground handling to 0.625" (total of 8 holes per side) as per dwg D2750.

2-Open up holes of Detail K to 0.750" (total of 4 holes per side) as per dwg D2750.

3-Open float holes to .500" (4 per Side)

4-Chamfer holes of Detail K, L, ground handling and float holes per dwg D2750 (welding instructions on sheet 9)

5-Deburr and blow out all chips from inside of tube

6-Prepare tube for welding, remove alodine as required.

7-Bond web D2739 in place as per QSI015

A/R Sikaflex-291

batch:

exp. date: 11/08/13

8- Weld spacers D3490-1, D3490-3 and D2743 as per dwg D2750 & QSI004 (welding instructions on sheet 9)

A/R Aluminum Rod

batch:

M118735

9- At section AP-AP drill out x-bolt spacer to 0.404"

10-Grind welds flush as per Dwg D2750

11-Spot face ground handling holes section (total of 4 places per side) as per

3 11/12/02

7 BE 11-12-08

11-12-9

W/O:		WORK ORDER CHANGES					
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1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours


Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

dwg D2750

12-Deburr holes

 11-12-9

170

QC10- Inspect visual per QSI004- ground welds

0.00

170

QC

Memo

0.00

Quality Control

S 11/12/09

180

QC5- Inspect part completeness to step on W/O

0.00

180

QC

Memo

0.00

Quality Control

S 11/12/09

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

190	Pressure Wash per QSI005 4.3	0.00							
190									
HandFinish	Memo	0.00							
Hand Finishing	Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.								

IX Ø M-L 11/12/10

200	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum	0.00							
-----	--	------	--	--	--	--	--	--	--

200									
Powdercoat									
Powder Coating									
	Memo	0.00							
	START TIME: <i>9:30</i>								
	OVEN TEMPERATURE: <i>320 °F</i>								
	FINISH TIME: <i>10:00</i>								

IX Ø M-L 11/12/12

210	QC3- Inspect Part Finish	0.00							
-----	--------------------------	------	--	--	--	--	--	--	--

210									
QC									
Quality Control	Memo	0.00							
	Inspect for foreign object per QSI 024								

i BL 11-12-B.

M 119480

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Item ID: D350-636-012

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Stop ***NS2***

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Start Date: 18/11/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 02/12/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

230

230

HandFinish

Hand Finishing

HandFinishing

Memo

1-Install inserts as per dwg D2750

2-Inspect for Foreign Objects

3-Spray inside of tube with "LPS-3"

batch: N/A4-Install blade fitting D3488-042, wearshoes and ground handling hardware as
per dwg D2750

SIKA FLEX 241

BATCH: 119413EXP DATE: 12-1

5-assemble o'ring to plug as per dwg D3492 and apply o'ring lube

A/R 55-o'ring lube batch: 110348

6-Coat all exposed fasteners with "LPS Procyon"

batch: 1149201 11-18-11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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76668

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N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 18/11/2011 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 02/12/2011 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

**Insp.
Stamp**

0.00

240

QC

Memo

0.00

Quality Control

0.00

250

Packaging

Memo

0.00

Packaging

0.00

260

QC

Memo

0.00

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Work Order ID 76668

76668

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November-18-11 1:03:18 PM

Item ID: D350-636-012 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Skidtube RH
 Start Date: 18/11/2011 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 02/12/2011 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00							
270									
Packaging	Memo	0.00							
Packaging	Package as per PPP D350-636-012								
280	QC21- Final Inspection - Work Order Release	0.00							
280									
QC	Memo	0.00							
Quality Control									

Root

Loc 72

11/12/14

11/12/15

MF 11-12-14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Picklist Print

November-18-11 1:03:22 PM

Page 1

13

Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:102.09.25Rearranged procedure stepsKJ
 IPP Rev:J 06-03-29 As per Rev D EC
 IPP Rev:K 06-07-13 As per dsi9343 EC
 IPP Rev:L 07-07-28 Added SS Wearplates(Rev E) JLM Verified By:EC
 IPP Rev:M 08-04-22 update steps 4,13 DD verified by:EC
 IPP Rev:N 08-09-23 revF as per dwg DD verified by:ec IPP Rev:O
 10.06.22 revise seq110 DD verf:EC IPP Rev:P 10.10.01 as
 per IIN revH DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

ALS4-1032-225

Purchased

No

Each

1,963.000

38

AI S4-1032-225

**

BR 11-12-13

Insert

Location

Loc Qty

Loc Code

ST281

1963

108696

283

110768

62

118386

858

118966 ✓

760

38.

AN3C5A

Purchased

No

230

Each

979.0000

34

34

AN3C.5A

**

BR 11-12-13

Bolt

Location

Loc Qty

Loc Code

FP

7

115835

7

ST350

972

116419

28

117343

17

117764

166

117872

2

118451 ✓

259

119127

500

10.

23.

Dart Aerospace Ltd

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D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

AN3C6A

Purchased

No

230

Each

260.0000

4

4

AN3C6A

BOLT

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP

119749

1

111982

1

ST350

100

119449

100

ST351

159

111982

2

116419

23

116549

2

116704

12

117619

10

117688

1

117872

5

118422

104

AN6C44A

Purchased

No

230

Each

115.0000

4

4

AN6C44A

BOLT

**

BL 11-12-13

Location

Loc Qty

Loc Code

FG

2

103964

2

ST343

113

118985 ✓

40

119125

30

119530

43

Dart Aerospace Ltd

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H:\FORMS\Quality Assurance\approved QA\NCRWO RevE

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Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

AN8C35A

Purchased

No

230

Each

101.0000

1

1

AN8C35A

BOLT

**

BR 11-12-13.

Location

Loc Qty

Loc Code

FP

66

115960

1

118286 ✓

65

ST345

34

117834

34

ST346

1

114442

0

115188

0

115960

1

AN960C10L

* NAS1149C0332 / R

Purchased

No

230

Each

0.0000

38

38

AN960C10L

washer

119786 .

**

38. BR 11-12-13.

D2745

Manufactured

No

230

Each

149.0000

8

8

D2745

Bushing

**

BR 11-12-13

Location

Loc Qty

Loc Code

FP

81

69529

1

74446 ✓

80

ST021

68

71835

68

8

W/O:		WORK ORDER CHANGES					
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D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D3488-042

Manufactured No

230

Each

24.0000

1

1

D3488-042

Blade Fitting Assembly, RH

**

BR 11-12-13

Location

Loc Qty

Loc Code

FP002

12

75068

12

FP008

12

62003

1

69904

2

71883

9

D3492-1

Manufactured No

230

Each

54.0000

8

8

D3492-1

Plug

**

BR 11-12-13

~~24~~ D3492-041

Location

Loc Qty

Loc Code

FP

54

69531

8

74444

46

D3492-3

Manufactured No

230

Each

97.0000

8

8

D3492-3

Plug

**

BR 11-12-13

Location

Loc Qty

Loc Code

FP

53

74447

53

FP-B

44

74871

44

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D3535-25

Manufactured No

230 Each

32.0000 1 1

D3535-25

Wearshoe

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP001

22

74525 ✓

10

75040

12

FP018

10

62233

1

74592

9

D3536-25

Manufactured No

230 Each

36.0000 1 1

D3536-25

Gasket

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP012

36

74595

10

75039 ✓

26

D3537-1

Manufactured No

230 Each

72.0000 3 3

D3537-1

Wearpad

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP002

65

74436 ✓

48

74597

17

FP017

7

69817

5

70686

2

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 6

Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D3631-1 Manufactured No

230

Each

511.0000

8

8

D3631-1

Washer

**

BL 11-12-13

Location

Loc Qty

Loc Code

ST072

511

68062

11

75548

500

D3791-1 Manufactured No

230

Each

33.0000

1

1

D3791-1

Wearplate

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP002

16

75041

16

FP017

17

62239

2

74527

3

74598

12

D3793-1 Manufactured No

230

Each

22.0000

1

1

D3793-1

Wearshoe

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP001

12

75038

12

FP018

10

74591

10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D3793-3

Manufactured No

230

Each

26.0000

1

1

D3793-3

Wearshoe

**

BR 11-12-13

Location

Loc Qty

Loc Code

FP001

26

74528

9

74593 ✓

5

75043

12

D3794-1

Manufactured No

230

Each

43.0000

1

1

D3794-1

Gasket

**

BR 11-12-13

Location

Loc Qty

Loc Code

FP014

43

74529

3

74594 ✓

12

75042

28

D3794-3

Manufactured No

230

Each

25.0000

1

1

D3794-3

Gasket

**

BR 11-12-13

Location

Loc Qty

Loc Code

FP002

25

74530 ✓

11

74596

14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Page 8

Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

MS21043-6

Purchased

No

230

Each

457.0000

4

4

MS21043-6

**

NUT

BR 11-12-13

Location

Loc Qty

Loc Code

FG

20

103693

20

ST300

437

112314 /

227

117887

10

118384

200

4.

MS21083C8

Purchased

No

230

Each

102.0000

1

1

MS21083C8

**

NUT

BR 11-12-13

Location

Loc Qty

Loc Code

FP-B

1

115884

1

ST293

1

118077

1

ST303

100

115884

0

118614 /

39

119309

11

119436

25

119638

25

1

NAS1149C0832R

Purchased

No

230

Each

333.0000

1

1

NAS1149C0832R

**

WASHER

BR 11-12-13

Location

Loc Qty

Loc Code

FP-B

5

114915 /

5

ST297

328

114915

328

1

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Page 8

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

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Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

NAS1515H3L

Purchased

No

230

Each

163.0000

4

4

***NAS1515H3I ***

WASHER

**

BL 11-12-13

Location

Loc Qty

Loc Code

FG

40

102472

40

ST277

123

113362

19

118686

4

119438 /

100

4.

NAS1611-010

Purchased

No

230

Each

251.0000

8

8

NAS1611-010

O-RING

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP

251

110915

14

117460

8

118077

1

118612

3

119307

7

119438 /

168

119623

50

8.

NAS1611-013

Purchased

No

230

Each

212.0000

8

8

NAS1611-013

O-RING

**

BL 11-12-13

Location

Loc Qty

Loc Code

FP

212

116582

5

117291

2

117887 /

53

119307

84

119438

18

119623

50

8.

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Page 9

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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Picklist Print

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Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

AN8C21A

Purchased No

250 Each

71.0000

2

**

AN8C21A

BOLT

Location

Loc Qty

Loc Code

ST343

71

118045

11

118758

30

119530

30

Manufactured No

250 Each

3.0000

**

D2741

D2741

Blade, 350 Skidtube

Location

Loc Qty

Loc Code

ST466

3

70667

3

Manufactured No

250 Each

61.0000

**

D3493-1

D3493-1

Washer

Location

Loc Qty

Loc Code

ST062

61

70697

4

71846

27

76237

30

Manufactured No

250 Each

46.0000

**

D3532-1

D3532-1

Spacer

Location

Loc Qty

Loc Code

ST065

46

73342

6

74880

40

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng./ Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

Picklist Print

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Page 11

Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

MS21083C8

Purchased

No

250

Each

102.0000

2

MS21083C8

**

NUT

Location

Loc Qty

Loc Code

FP-B

1

115884

1

ST293

1

118077

1

ST303

100

115884

0

118614

39

119309

11

119436

25

119638

25

NAS1149D0863J

Purchased

No

250

Each

208.0000

2

NAS1149D0863J

**

WASHER

Location

Loc Qty

Loc Code

ST298

208

118078

108

119307

100

D2600-3-BENT

Manufactured

No

110

Each

24.0000

1

D2600-3-BFNT

**

Extrusion Bent

Location

Loc Qty

Loc Code

LG

24

66875

8

73253

1

75021

4

75022

10

75023

1

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① JW 11-12-14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 12

Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D2744

Manufactured No

110

Each

54.0000

1

1

D2744

Cap

**

BE11-11-29

Location

Loc Qty

Loc Code

LG002

13

62715

1

70881

12

WA

41

71861

41

D2739

Manufactured No

160

Each

7.0000

1

1

D2739

350 I Beam

**

①

B

11/12/02

Location

Loc Qty

Loc Code

LG

7

72155

1

76140

6

D2743

Manufactured No

160

Each

127.0000

8

8

D2743

Crossbolt Spacer

**

BE11-12-08

B76141

v8

Location

Loc Qty

Loc Code

LG

69

71839

5

73403

64

LG001

58

67766

4

68251

54

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Work Order ID: 76668

76668

Parent Item: D350-636-012

D350-636-012

Parent Item Name: Skidtube RH

Start Date: 18/11/2011

Required Date: 02/12/2011

Start Qty: 1.00

Required Qty: 1.00

D3490-3

Manufactured No

160

Each

86.0000

4

4

D3490-3

Cross Bolt Spacer

**

BE 11-12-08

Location

Loc Qty

Loc Code

LG

46

73295

6

76234

40

LG001

40

74877

40

D3490-1

Manufactured No

160

Each

74.0000

4

4

D3490-1

Cross Bolt Spacer

**

BE 11-12-08

Location

Loc Qty

Loc Code

LG

8

67773

5

71841

3

LG001

66

62450

2

74875

64

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

QTY -041	QTY -042	QTY -043	QTY -044	PART NUMBER	DESCRIPTION
X				D2750-041	350 SKIDTUBE ASSEMBLY, LH
	X			D2750-042	350 SKIDTUBE ASSEMBLY, RH
		X		D2750-043	350 SKIDTUBE ASSEMBLY, LH
			X	D2750-044	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	D2739	WEB
8	8	8	8	D2743	SPACER
1	1	1	1	D2744	CAP
8	8	8	8	D2745	BUSHING
1				D2750-1	SKIDTUBE WELDMENT, LH
	1			D2750-2	SKIDTUBE WELDMENT, RH
		1		D2750-3	SKIDTUBE WELDMENT, LH
			1	D2750-4	SKIDTUBE WELDMENT, RH
1		1		D3488-041	BLADE FITTING, LH
	1		1	D3488-042	BLADE FITTING, RH
4	4	4	4	D3490-1	SPACER
4	4			D3490-3	SPACER
		4	4	D3490-5	SPACER
8	8	8	8	D3492-041	PLUG ASSEMBLY
8	8			D3492-043	PLUG ASSEMBLY
		8	8	D3492-045	PLUG ASSEMBLY
1	1	1	1	D3535-25	WEARSHOE
1	1	1	1	D3536-25	GASKET
3	3	3	3	D3537-1	WEARPAD
8	8	8	8	D3631-1	WASHER
1	1	1	1	D3791-1	WEARPLATE
1	1	1	1	D3793-1	WEARSHOE
1	1	1	1	D3793-3	WEARSHOE
1	1	1	1	D3794-1	GASKET
1	1	1	1	D3794-3	GASKET
38	38	38	38	ALS4-1032-225	INSERT (OR ALS7-1032-225, AKS4-1032-225, AELS-1032-225)
34	34	34	34	AN3C5A	BOLT
4	4	4	4	AN3C6A	BOLT
4	4	4	4	AN6C44A	BOLT
1	1	1	1	AN8C35A	BOLT
38	38	38	38	AN960C10L	WASHER
1	1	1	1	AN960C816L	WASHER
4	4	4	4	MS21043-6	NUT
1	1	1	1	MS21083C8	NUT
4	4	4	4	NAS1515H3L	WASHER

GENERAL NOTES:

- 1) MATERIAL: MAKE D2750-1/-2/-3/-4 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- 2) FINISH:
ACID ETCH, ALONDE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB.
POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: D2750-041/-042/-043/-044 = 26.5 LBS
- 8) WELD PER DART QSI 004
- 9) INSTALL ALS4-1032-225 INSERTS AFTER FINISH AS INDICATED. DRILL 'F' SIZE HOLES (Ø0.297) FOR WEARSHOE INSERTS
- 10) FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
MINIMUM YIELD TENSILE STRENGTH = 35 KSI
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- 11) SPRAY INSIDE OF TUBE WITH A COAT OF LPS LABORATORIES "LPS-3" AFTER FINISH AND AFTER INSTALLATION OF INSERTS.
COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF
POWDER COATING WITH MEK DEGREASER.
- 12) SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- 13) SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

SHOP COPY
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SUBJECT TO AMENDMENT

WITHOUT NOTICE
WORK ORDER

NO. 76668 M.L.J

11/11/18

RELEASED

F	INCORPORATE DSI 9413; QTY (3) D3537-1 WAS QTY (5) (ZN C8-1); D3791-1/3 REPLACES D3535-13/35 (ZN C8-1); D3794-1/3 REPLACES D3536-13/35 (ZN B8-1); ADD D3791-1 (ZN C8-1); WEARSHOE HOLES UNDER FWD/AFT SADDLE REMOVED (8 PL). WEARSHOE HARDWARE QTY UPDATED (ZN B8-1); D3488-041/-042 HARDWARE UPDATED (ZN C1-8, 9, 10, 11); ADD NOTE 12 AND 13 (ZN A6-1); REASON: REF. NCR 08-043	PH	08.07.16
E	CHANGE TO STAINLESS STEEL WEARPLATES; ADD RUBBER GASKETS; CHANGE INSERTS: ADD D3631-1; REMOVE QTY (38) NAS1515H3L; REMOVE QTY (10) NAS1515H8L; REMOVE D2741, QTY (2) AN960C816; REMOVE QTY (2) MS21083C8	CB	07.05.17
D	ADD HOLES AND SPACERS FOR APICAL FLOATS; INCORPORATE DEO 9133/9157	PH	06.01.05
C	ADD D2750-3/D2750-4, INCORPORATE D2738 AND D2740	CP	98.11.18
B	CHANGE MS24694-S293 TO AN-16A	CP	98.09.01
A	NEW ISSUE	DS	98.04.16
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	08.07.16		
DART AEROSPACE USA, INC. PORT HADLOCK, WA			
DRAWING NO. D2750		REV. F SHEET 1 OF 11	
TITLE 350 SKIDTUBE ASSEMBLY		SCALE NTS	
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Dart Aerospace Ltd

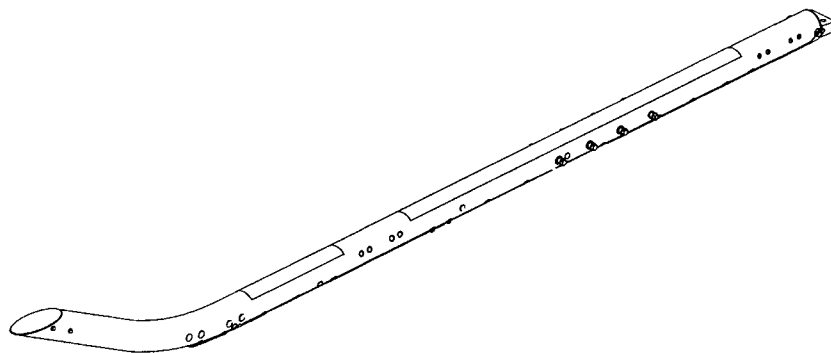
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

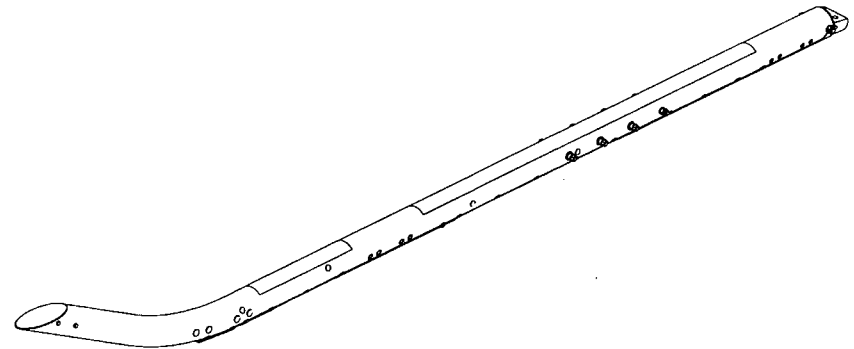
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

76668



D2750-041 350 SKIDTUBE ASSEMBLY, LH



D2750-042 350 SKIDTUBE ASSEMBLY, RH

RELEASED
08-09-22-14

DESIGN	REV	DART AEROSPACE USA, INC.	
DRAWN	AM	PORT HADLOCK, WA	
CHECKED	AM	DRAWING NO.	REV. F
MFG. APPR.	AM	D2750	SHEET 2 OF 11
APPROVED	AM	TITLE	SCALE
DE APPR.	AM	350 SKIDTUBE ASSEMBLY	NTS
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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

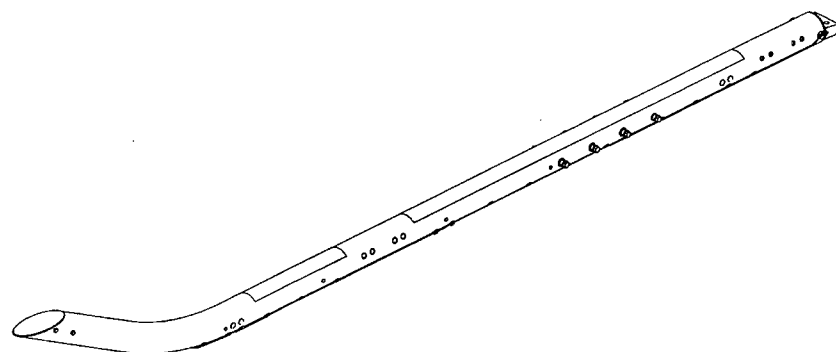
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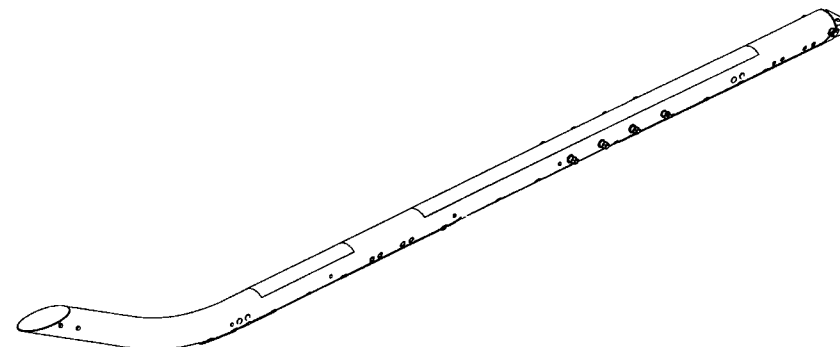
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

76668



D2750-043 350 SKIDTUBE ASSEMBLY, LH



D2750-044 350 SKIDTUBE ASSEMBLY, RH

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64-9-22/11

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CHECKED	<i>PD</i>	DRAWING NO.	REV. F
MFG. APPR.	<i>NA</i>	D2750	SHEET 3 OF 11
APPROVED	<i>NA</i>	TITLE	SCALE
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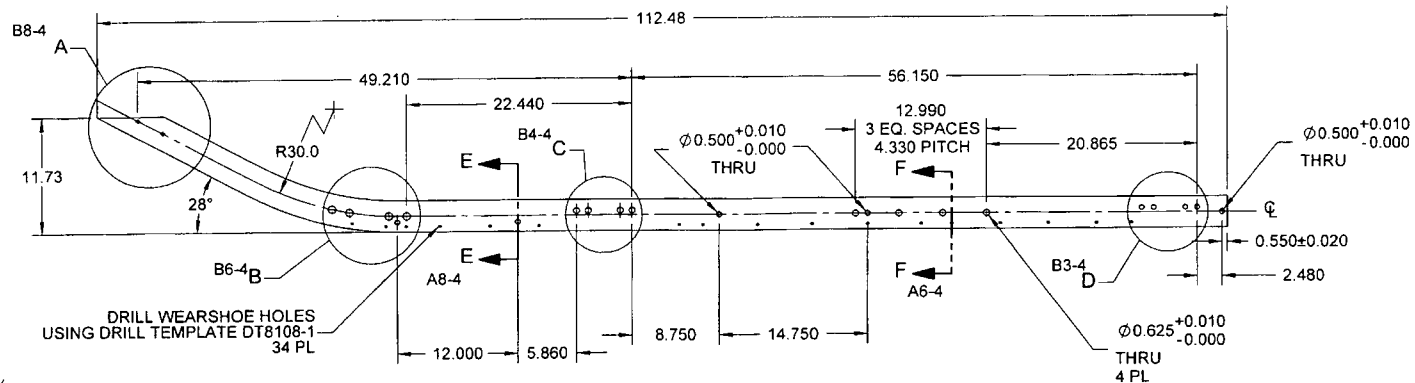
Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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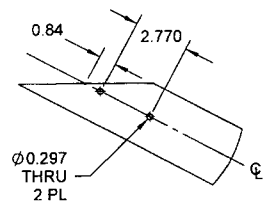
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

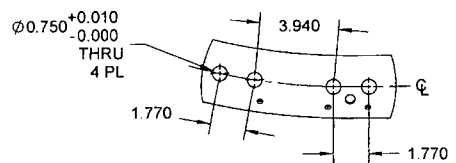
76668



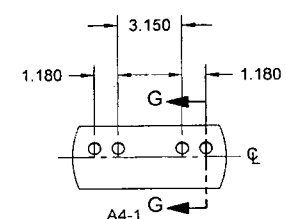
D2750-1 LH SKIDTUBE



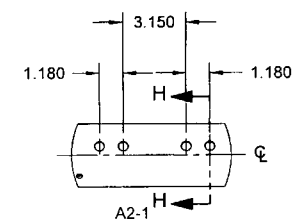
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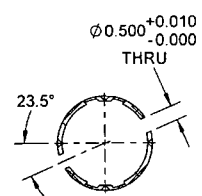
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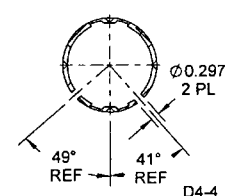
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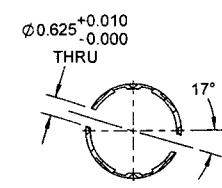
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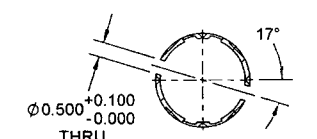
SECTION E-E
SCALE 3X, 2 PL



SECTION F-F
SCALE 3X, 17 PL



SECTION G-G
SCALE 3X, 4 PL



SECTION H-H
SCALE 3X, 4 PL

DESIGN	PH
DRAWN	PH
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	08.07.16

DART AEROSPACE USA, INC. PORT HADLOCK, WA	
DRAWING NO. D2750	REV. F
TITLE 350 SKIDTUBE ASSEMBLY	SCALE NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

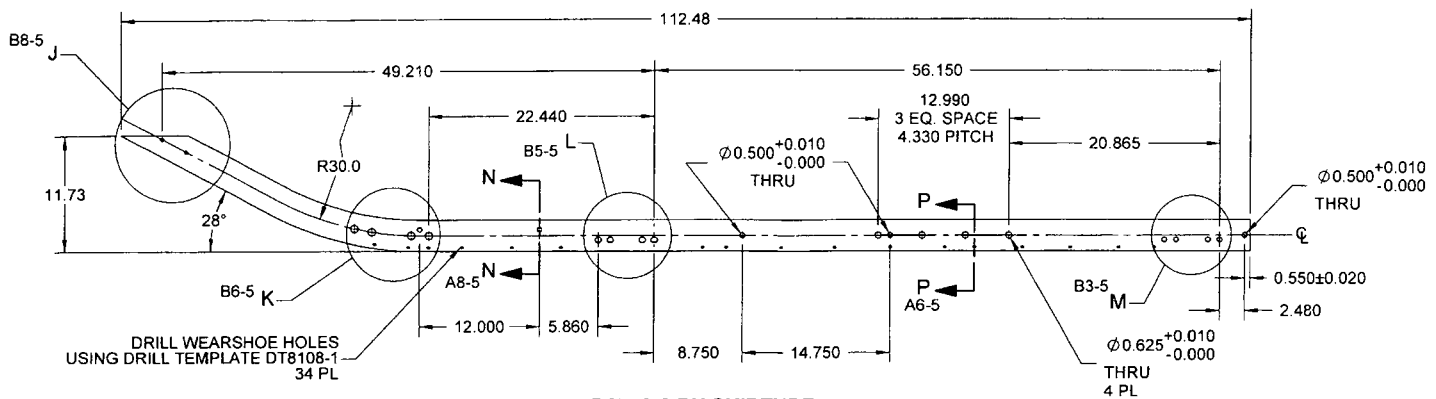
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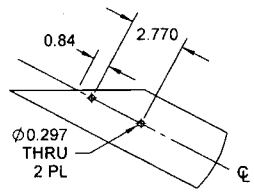
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

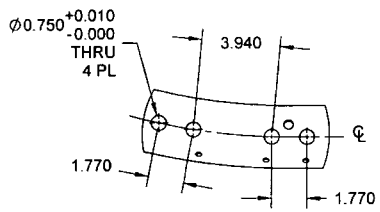
76668



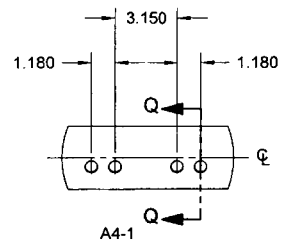
D2750-2 RH SKIDTUBE



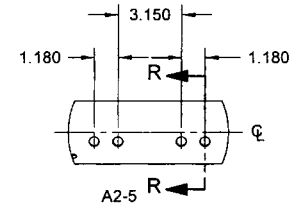
DETAIL J
SCALE 2X



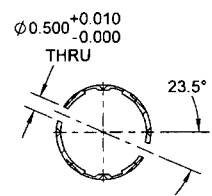
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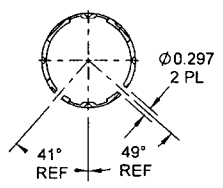
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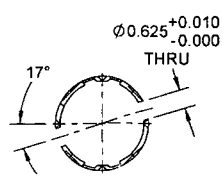
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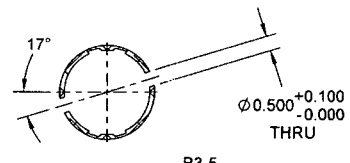
SECTION N-N
SCALE 3X, 2 PL



SECTION P-P
SCALE 3X, 17 PL



SECTION Q-Q
SCALE 3X, 4 PL



SECTION R-R
SCALE 3X, 4 PL

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DESIGN	REV	DART AEROSPACE USA, INC.	
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

76668

8 7 6 5 4 3 2 1

D

C

B

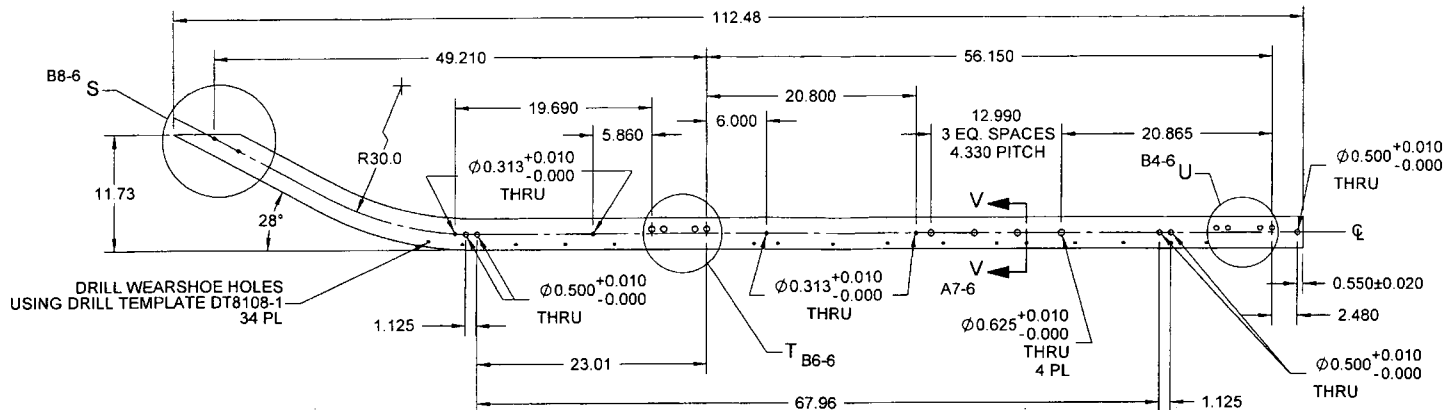
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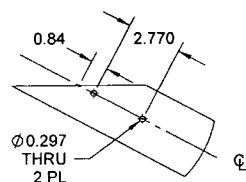
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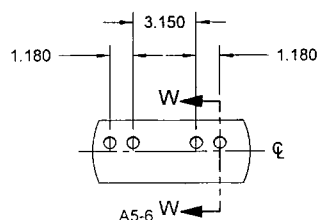
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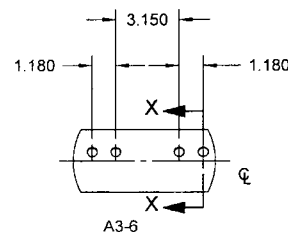
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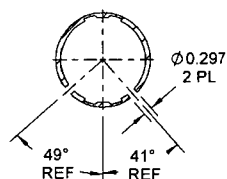
DETAIL S
D8-6
SCALE 2X



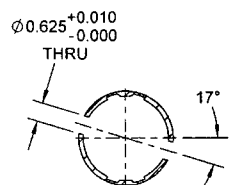
DETAIL T
C5-6
SCALE 2X



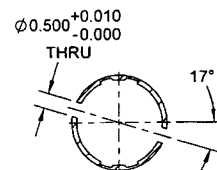
DETAIL U
D3-6
SCALE 2X



SECTION V-V
C4-6
SCALE 3X, 17 PL



SECTION W-W
B6-6
SCALE 3X, 4 PL



SECTION X-X
B4-6
SCALE 3X, 4 PL

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08-12-11

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MFG. APPR.		D2750	SHEET 6 OF 11
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

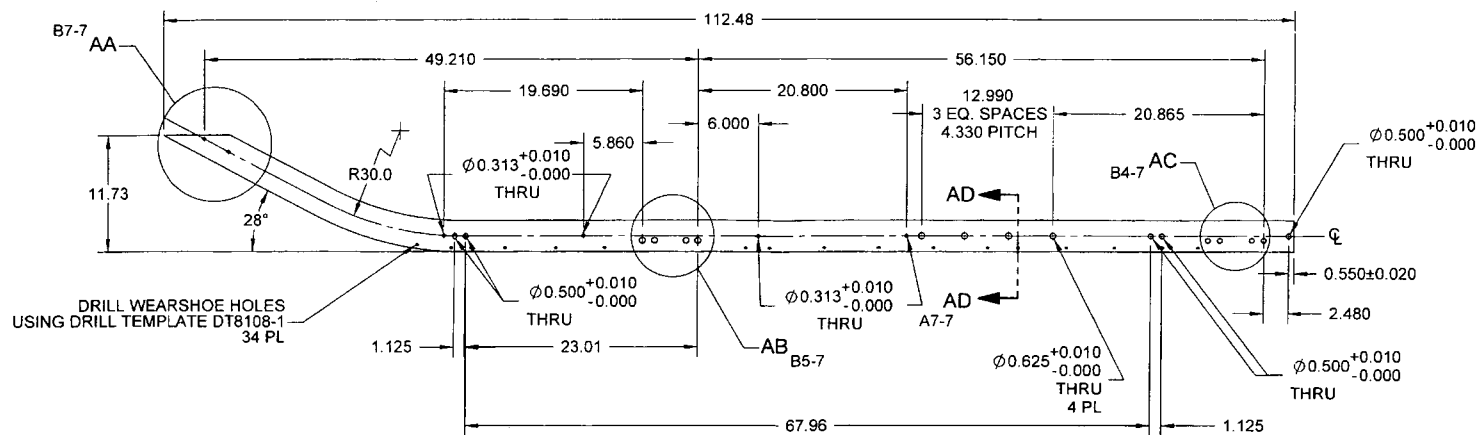
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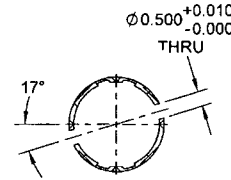
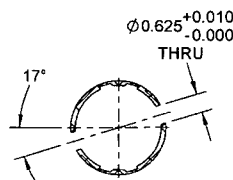
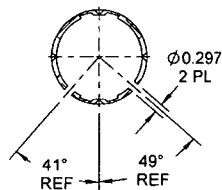
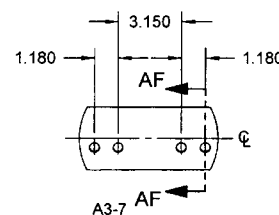
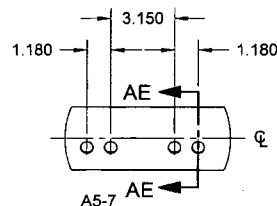
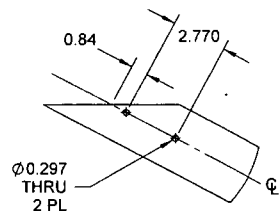
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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D2750-4 RH SKIDTUBE



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DESIGN	PA	DART AEROSPACE USA, INC.	
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CHECKED	PA	DRAWING NO. D2750	REV. F
MFG. APPR.	PA	TITLE 350 SKIDTUBE ASSEMBLY	SCALE NTS
APPROVED	PA	DATE 08.07.16	
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

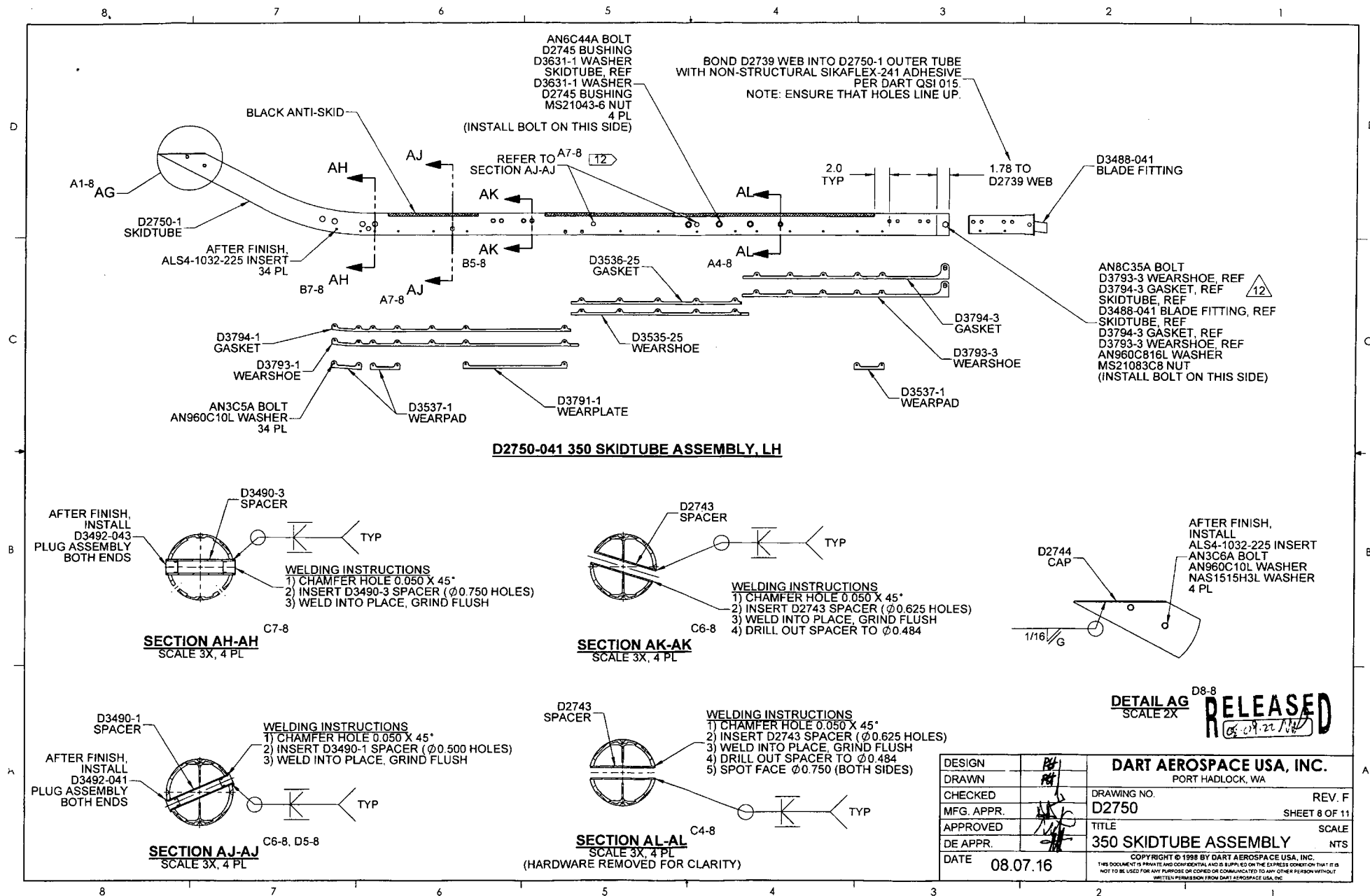
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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DESIGN		DART AEROSPACE USA, INC.	
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CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2750	SHEET 8 OF 11
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

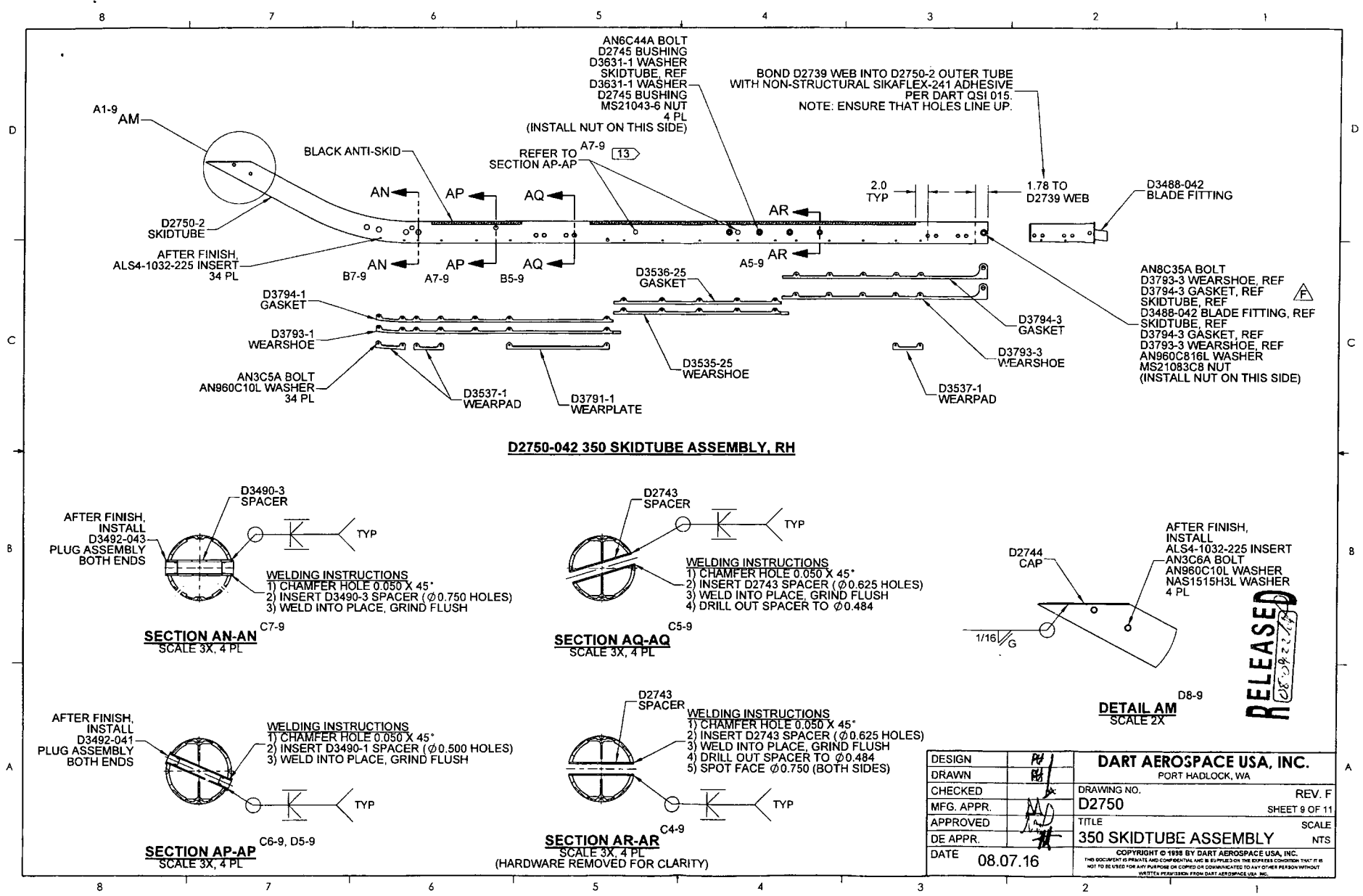
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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DESIGN	PA	DART AEROSPACE USA, INC.	
DRAWN	PA	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2750	SHEET 9 OF 11
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

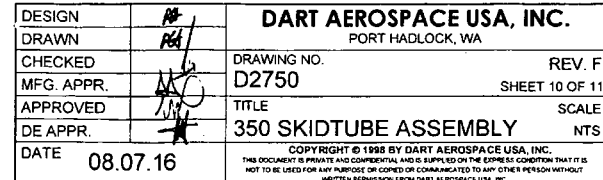
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DETAIL AS D8-10
SCALE 1/2"



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

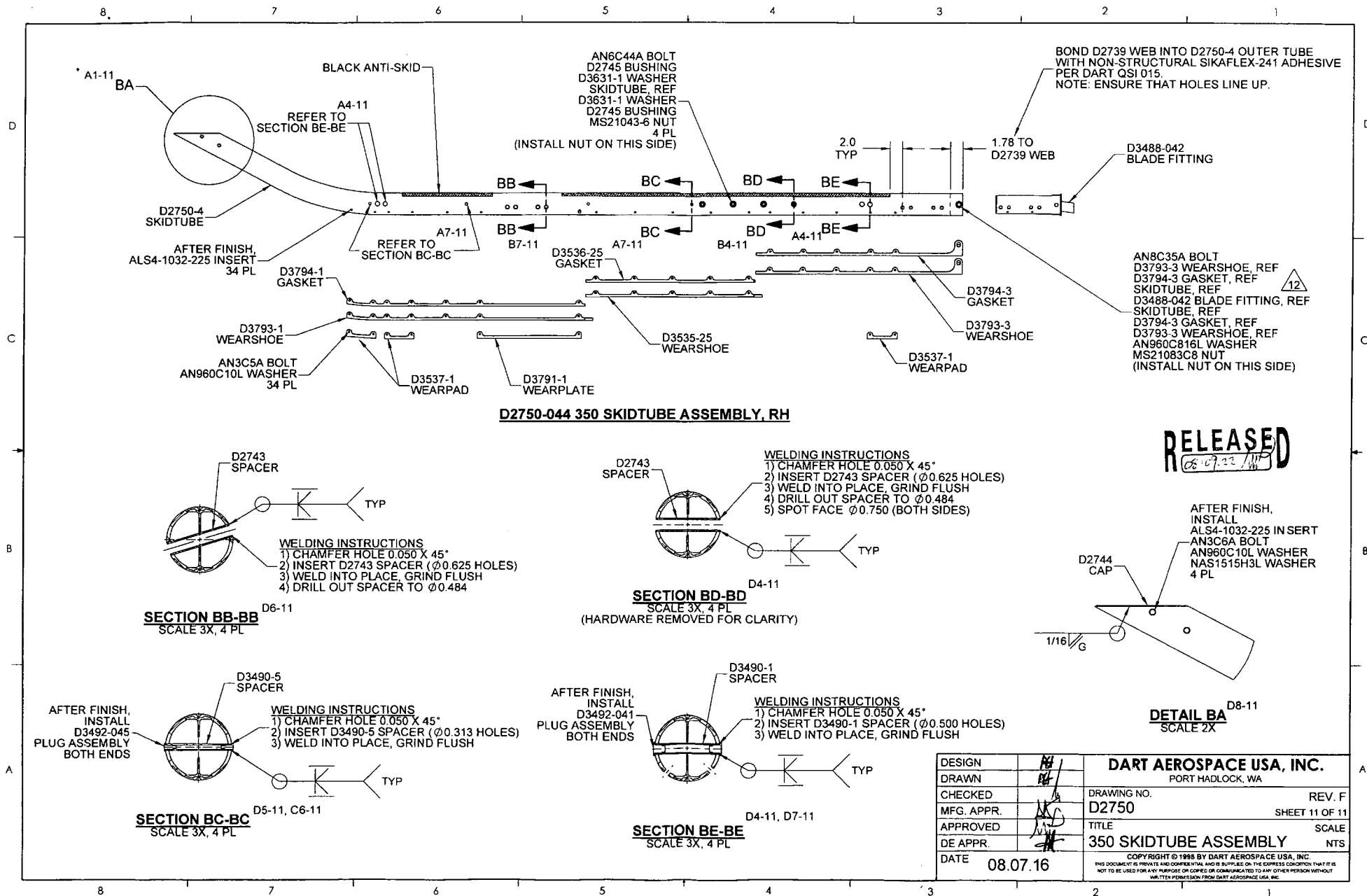
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 276

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliot
Job number: 75349
Part number: 350-630-011
Description: Skid tube
Welding Process: Tig[☒] Mig[]
Base material: Alum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier David Paul Date of Test Coupon 11.11.22
Welder Barclay Elliot Date of Test Coupon 11.11.22

The above named individual is qualified in accordance with AWS D17.1.2001 to weld